

I-Chao Shen

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Research Interests

Computer graphics, vector graphics, data-driven 2D/3D geometry analysis and processing, machine learning.

Education

National Taiwan University **Taipei, Taiwan**
Ph.D. in Computer Science
Sep 2017 - Dec. 2020

Advisor: Bing-Yu Chen.

Thesis: 2D Visual Content Design Driven by Human-Guided Optimization

National Taiwan University **Taipei, Taiwan**
Master in Information Management and MBA
Sep 2009 - June 2011

Advisor: Bing-Yu Chen.

Thesis: Perspective-aware Warping for Seamless Stereoscopic Image Cloning

National Taiwan University **Taipei, Taiwan**
Bachelor in Information Management
Sep 2005 - June 2009

Experiences

Assistant Professor, Tokyo, Japan *Apr. 2023 -*
Dept. of Computer Science, The University of Tokyo

Adjunct Project Assistant Professor, Tokyo, Japan *Sep. 2025 -*
Graduate School of Arts and Sciences, The University of Tokyo

Adjunct Assistant Professor, Tokyo, Japan *July. 2023 - Mar. 2025*
The Institute for AI and Beyond, The University of Tokyo

Project Assistant Professor, Tokyo, Japan *Sep. 2022 - Mar. 2023*
Dept. of Creative Informatics, The University of Tokyo

Postdoctoral researcher - JSPS Foreign Researchers Fellowship, Tokyo, Japan *Dec. 2020 - Aug. 2022*
Host : Takeo Igarashi

Research Visitor - JST CREST Project, Tokyo, Japan *Feb 2018 - July 2018, Aug 2019*
Supervisor : Takeo Igarashi

Research Assistant - CMLab, National Taiwan University, Taipei, Taiwan *Apr 2017 - July 2017*
Supervisor : Bing-Yu Chen

Research Assistant - Imager Lab, The University of British Columbia,
Vancouver, Canada *Sep 2014 - Mar 2017*
Supervisor : Alla Sheffer

Research Intern - Imagination Lab, Adobe Research, San Jose, CA *May 2015 - Aug 2015*
Supervisor : Nathan Carr, Duygu Ceylan, Zhaowen Wang

Research Assistant - CITI, Academia Sinica, Taipei, Taiwan *Sep 2011 - July 2014*
Supervisor : Wen-Huang Cheng

Publications

Axis-Aligned Document Dewarping
Chaoyun Wang, I-Chao Shen, Takeo Igarashi, Caigui Jiang
AAAI 2026 (Oral) ([arxiv:2507.15000](https://arxiv.org/abs/2507.15000))

Cascaded Robust Rectification for Arbitrary Document Images

Chaoyun Wang, Quanxin Huang, I-Chao Shen, Takeo Igarashi, Nanning Zheng, Caigui Jiang
IEEE Transaction on Multimedia (TMM) 2026 ([arxiv:2511.23150](#))

Low-Barrier Dataset Collection with Real Human Body for Interactive Per-Garment Virtual Try-On

Zaiqiang Wu, Yechen Li, Jingyuan Liu, Yuki Shibata, Takayuki Hori, I-Chao Shen, Takeo Igarashi
IEEE Computer Graphics and Applications (CG&A) 2026 ([arxiv:2506.10468](#))

LayerPack: Training-Free Animation Inbetweening with Cross-Layer Consistency

Atsushi Maruyama, Sosui Koga, Akinobu Maejima, Yuki Koyama, I-Chao Shen, Takeo Igarashi
CVM 2026

CleanAvatar: Artifact-free Gaussian Avatar via Mesh Guidance and Segmentation-driven Augmentation

Jinsong Zhang, I-Chao Shen, Jotaro Sakamiya, Yu-Kun Lai, Takeo Igarashi, Kun Li
CVM 2026

AutoSketch: VLM-assisted Style-Aware Vector Sketch Completion

Hsiao-Yuan Chin*, I-Chao Shen*[†], Yi-Ting Chiu, Ariel Shamir, Bing-Yu Chen[†] (*: joint first authors, [†]: joint corresponding authors)

SIGGRAPH ASIA 2025 (Conference track) ([arxiv:2502.06860](#))

ScrapReCover: An Interactive Optimization System for Freeform Patchwork Layouts

Masahiro Kono, Maria Larsson, I-Chao Shen and Takeo Igarashi
ACM Symposium on Computational Fabrication (SCF) 2025

LayoutRectifier: An Optimization-based Post-processing for Graphic Design Layout Generation

I-Chao Shen, Ariel Shamir, Takeo Igarashi
Pacific Graphics 2025 (Journal track)

Real-Time Per-Garment Virtual Try-On with Temporal Consistency for Loose-Fitting Garments

Zaiqiang Wu, I-Chao Shen, Takeo Igarashi
Pacific Graphics 2025 (Journal track)

MeshLLM: Empowering Large Language Models to Progressively Understand and Generate 3D Mesh

Shuangkang Fang, I-Chao Shen, Yufeng Wang, Yi-Hsuan Tsai, Yi Yang, Shuchang Zhou, Wenrui Ding, Takeo Igarashi, Ming-Hsuan Yang
ICCV 2025 (Highlight, top 2.3%)

NeRF Is a Valuable Assistant for 3D Gaussian Splatting

Shuangkang Fang, I-Chao Shen, Takeo Igarashi, Yufeng Wang, ZeSheng Wang, Yi Yang, Wenrui Ding, Shuchang Zhou
ICCV 2025

GarmentImage: Raster Encoding of Garment Sewing Patterns with Diverse Topologies

Yuki Tatsukawa, Anran Qi, I-Chao Shen, Takeo Igarashi
SIGGRAPH 2025 (Conference Track)

The Mokume Dataset and Inverse Modeling of Solid Wood Textures

Maria Larsson, Hodaka Yamaguchi, Ehsan Pajouheshgar, I-Chao Shen, Kenji Tojo, Chia-Ming Chang, Lars Hansson, Olof Broman, Takashi Ijiri, Ariel Shamir, Wenzel Jakob, Takeo Igarashi
SIGGRAPH 2025 (Transaction on Graphics)

FontCraft: Multimodal Font Design Using Interactive Bayesian Optimization

Yuki Tatsukawa, I-Chao Shen, Mustafa Doga Dogan, Anran Qi, Yuki Koyama, Ariel Shamir, Takeo Igarashi
CHI 2025

CompAct: Designing Interconnected Compliant Mechanisms with Active Material Integration

Humphrey Yang, I-Chao Shen, Nikolas Martelaro, Bo Zhu, Haoran Xie, Takeo Igarashi, Lining Yao
CHI 2025

Approximating Procedural Models of 3D Shapes with Neural Networks

Ishtiaque Hossain, [I-Chao Shen](#), Oliver van Kaick
Eurographics 2025

Interactive Multilayer Gaussian Garments for Low-Cost Try-On

Ryan Zesch, [I-Chao Shen](#), Haoran Xie, Bo Zhu, Shinjiro Sueda, Takeo Igarashi
Graphics Interface (GI) 2025

FontCLIP: A Semantic Typography Visual-Language Model for Multilingual Font Applications

Yuki Tatsukawa, [I-Chao Shen](#), Anran Qi, Yuki Koyama, Takeo Igarashi, Ariel Shamir
Eurographics 2024

Learned Inference of Annual Ring Pattern of Solid Wood

Maria Larsson*, Takashi Ijiri*, [I-Chao Shen](#), Hironori Yoshida, Ariel Shamir, Takeo Igarashi (*: joint first authors)
Computer Graphics Forum 2024

Virtual Measurement Garment for Per-Garment Virtual Try-On

Zaiqiang Wu, Jingyuan Liu, Long Hin Toby Chong, [I-Chao Shen](#), Takeo Igarashi
Graphics Interface 2024

Improving Cache Placement for Efficient Cache-based Rendering

Yu-Ting Wu, [I-Chao Shen](#)
The Visual Computer 2024

StylePart: Image-based Shape Part Manipulation

[I-Chao Shen](#), Li-Wen Su, Yu-Ting Wu, Bing-Yu Chen
The Visual Computer 2024

NeRF-In: Free-Form NeRF Inpainting with RGB-D Priors

[I-Chao Shen](#)*, Hao-Kang Liu*, Bing-Yu Chen (*: joint first authors)
IEEE Computer Graphics and Applications (CG&A) 2023

Palette-Based and Harmony-Guided Colorization for Vector Icons

Miao Lin*, [I-Chao Shen](#)*, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen (*: joint first authors)
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

Data-guided Authoring of Procedural Models of Shapes

Ishtiaque Hossain, [I-Chao Shen](#), Takeo Igarashi, Oliver van Kaick
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

EvIcon: Designing High-Usability Icon with Human-in-the-loop Exploration and IconCLIP

[I-Chao Shen](#), Fu-Yin Cherng, Takeo Igarashi, Wen-Chieh Lin, Bing-Yu Cheng
Computer Graphics Forum Volume 42, Issue 6, September 2023

360MVSNet: Deep Multi-view Stereo Network with 360° Images for Indoor Scene Reconstruction

Ching-Ya Chiu, Yu-Ting Wu, [I-Chao Shen](#), Yung-Yu Chuang
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023 (Algorithm Track)

ClipGen: A Deep Generative Model for Clipart Vectorization and Synthesis

[I-Chao Shen](#), Bing-Yu Chen
IEEE Transactions on Visualization and Computer Graphics (TVCG), pp. 4211-4224, vol. 28, Dec. 2022

StyleFaceUV: a 3D Face UV Map Generator for View-Consistent Face Image Synthesis

Wei-Chieh Chung, Jian-Kai Zhu, [I-Chao Shen](#), Yu-Ting Wu, Yung-Yu Chuang
The British Machine Vision Conference (BMVC) 2022

ODEN: Live Programming for Neural Network Architecture Editing

Chunqi Zhao, [I-Chao Shen](#), Tsukasa Fukusato, Jun Kato, Takeo Igarashi
Proceeding of ACM Intelligent User Interfaces (IUI) 2022

Per Garment Capture and Synthesis for Real-time Virtual Try-on

Toby Chong, [I-Chao Shen](#), Nobuyuki Umetani, Takeo Igarashi
Proceeding of User Interface Software and Technology (UIST) 2021

Data-driven Sketch Beautification with Neural Feature Representation

[I-Chao Shen](#)
IEEE Computer Graphics and Applications (CG&A) 2021

Multi-Resolution Shared Representative Filtering for Real-Time Depth Completion

Yu-Ting Wu, Tzu-Mao Li, [I-Chao Shen](#), Hong-Shiang Lin, Yung-Yu Chuang
High-Performance Graphics (HPG) 2021

ClipFlip : Multi-view Clipart Design

[I-Chao Shen](#), Kuan-Hung Liu, Li-Wen Su, Yu-Ting Wu, and Bing-Yu Chen
Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:2008.12933 [cs.GR]

Interactive Optimization of Generative Image Modeling using Sequential Subspace Search and Content-based Guidance

Toby Chong Long Hin*, [I-Chao Shen](#)*, Issei Sato, and Takeo Igarashi (*: joint first authors)
Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:1906.09840 [cs.GR]

ZomeFab: Cost-effective Hybrid Fabrication with Zometools

[I-Chao Shen](#), Ming-Shiuan Chen, Chun-Kai Huang, and Bing-Yu Chen
Computer Graphics Forum, Volume 39, Issue 1, Feb 2020

Director-360: Introducing Camera Handling to 360 Cameras

Hao-Juan Huang, [I-Chao Shen](#), and Liwei Chan
in proceeding of MobileHCI 2020

Perception-Driven Semi-Structured Boundary Vectorization

Shayan Hoshyari, Edoardo Dominici, Alla Sheffer, Nathan Carr, Duygu Ceylan, Zhaowen Wang, [I-Chao Shen](#)
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018).

High-resolution 360 Video Foveated Stitching for Real-time VR

Wei-Tse Lee*, Hsin-I Chen*, Ming-Shiuan Chen, [I-Chao Shen](#) and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2017)

A Scalable Active Framework for Region Annotation in 3D Shape Collections

Li Yi, Vladimir G. Kim, Duygu Ceylan, [I-Chao Shen](#), Mengyan Yan, Hao Su, Cewu Lu, Qixing Huang, Alla Sheffer, and Leonidas Guibas
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2016)

Retargeting 3D Objects and Scenes with a General Framework

Chun-Kai Huang, Yi-Ling Chen, [I-Chao Shen](#), and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2016)

Data-driven Handwriting Synthesis in a Conjoined Manner

Hsin-Yi Chen, Tse-Ju Lin, [I-Chao Shen](#), and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2015)

Gestalt Rule Feature Points

[I-Chao Shen](#) and Wen-Huang Cheng
IEEE Transactions on Multimedia (TMM), 17(4), pp. 526-537, 2015

Geometrically Consistent Stereoscopic Image Editing using Patch-based Synthesis

Sheng-Jie Luo, Ying-Tse Sun, [I-Chao Shen](#), Bing-Yu Chen, and Yung-Yu Chuang
IEEE Transactions on Visualization and Computer Graphics (TVCG), 21(1), pp. 56-67, 2015

Stroke-guided Image Synthesis for Skeletal Structure Editing

Sheng-Jie Luo, Chin-Yu Lin, [I-Chao Shen](#), and Bing-Yu Chen
Computer Graphics Forum (Proceedings of Pacific Graphics 2013)

Perspective-Aware Warping for Seamless Stereoscopic Image Cloning
Sheng-Jie Luo, [I-Chao Shen](#), Bing-Yu Chen, Wen-Huang Cheng, and Yung-Yu Chuang
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2012).

Technical Reports and Preprints

AvatarPerfect: User-Assisted 3D Gaussian Splatting Avatar Refinement with Automatic Pose Suggestion

Jotaro Sakamiya, [I-Chao Shen](#), Jinsong Zhang, Mustafa Doga Dogan, Takeo Igarashi
arxiv preprint ([arxiv:2412.1560](#))

AutoPoly: Predicting an Artist-Compatible Polygonal Mesh Construction Sequence from a Silhouette Image

[I-Chao Shen](#), Yu Ju Chen, Oliver van Kaick, Takeo Igarashi
arxiv preprint ([arxiv:2203.15233](#))

Workshop Papers, Short Papers, Posters

Many-Inbetweens Browsing: Exploring Pre-Generated Inbetweens for 2D Animation

Jotaro Sakamiya, Akinobu Maejima, Yuki Koyama, [I-Chao Shen](#), Takeo Igarashi
SIGGRAPH ASIA 2025 Poster Program

LayerPack: Training-Free Animation Inbetweening with Cross-Layer Consistency

Atsushi Maruyama, Sosui Koga, Akinobu Maejima, Yuki Koyama, [I-Chao Shen](#), Takeo Igarashi
SIGGRAPH ASIA 2025 Poster Program

Designing Reconfigurable Joints

Atsushi Maruyama, Maria Larsson, [I-Chao Shen](#), Takeo Igarashi
SIGGRAPH ASIA 2024 Technical Communication (Honorable Mention Award)

DualAvatar: Robust Gaussian Splatting Avatar with Dual Representation

Jinsong Zhang, [I-Chao Shen](#), Jotaro Sakamiya, Yu-Kun Lai, Takeo Igarashi, Kun Li
SIGGRAPH ASIA 2024 Poster Program

Generating Font Variations Using Latent Space Trajectory

Sotaro Kanazawa, [I-Chao Shen](#), Yuki Tatsukawa, Takeo Igarashi
SIGGRAPH ASIA 2024 Poster Program

3D Reconstruction from Sketch with Hidden Lines by Two-Branch Diffusion Model

Yuta Fukushima, Anran Qi, [I-Chao Shen](#), Yulia Gryaditskaya, Takeo Igarashi
Eurographics 2024 Short Paper

MicroGlam: Microscopic Skin Image Dataset with Cosmetics

Toby Chong, Alina Chadwick, [I-Chao Shen](#), Haoran Xie, Takeo Igarashi
SIGGRAPH ASIA 2023 Technical Communication

Computational Design of Nebuta-like Paper-on-Wire Artworks

Naoki Agata, Anran Qi, Yuta Noma, [I-Chao Shen](#), Takeo Igarashi
SIGGRAPH 2023 Poster Program

Palette-Based Colorization for Vector Icons

Miao Lin, [I-Chao Shen](#), Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen
SIGGRAPH 2023 Poster Program

OVERPAINT: Automatic Multi-Layer Stencil Generation without Bridges

Yuta Fukushima, Anran Qi, [I-Chao Shen](#), Takeo Igarashi
SIGGRAPH ASIA 2022 Technical Communication

Guided Image Weathering using Image-to-Image Translation

Li-Yu Chen, [I-Chao Shen](#), and Bing-Yu Chen
SIGGRAPH ASIA 2021 Technical Communication

Real-time Image-based Virtual Try-on with Measurement Garment

Toby Chong, [I-Chao Shen](#), Yunfei Qian, Nobuyuki Umetani, Takeo Igarashi
SIGGRAPH ASIA 2021 Emerging Technologies

Transferring Deep Reinforcement Learning with Adversarial Objective and Augmentation

[I-Chao Shen](#), Shu-Hsuan Hsu, and Bing-Yu Chen
IJCAI-PRICAI 2020 Workshop on Knowledge-Based Reinforcement Learning (KBRL)

Large-scale fabrication with interior zometool structure

Ming-Shiuan Chen, [I-Chao Shen](#), Chun-Kai Huang, and Bing-Yu Chen
ACM SIGGRAPH Poster Program 2018

A Deep Learning Based Method For 3D Human Pose Estimation From 2D Fisheye Images

Ching-Chun Chen, Chia-Min Wu, [I-Chao Shen](#), and Bing-Yu Chen.
ACM IUI Poster Program 2018

Retargeting 3D objects and scenes

Chun-Kai Huang, Yi-Ling Chen, [I-Chao Shen](#), and Bing-Yu Chen
ACM SIGGRAPH Poster Program 2015

Painting Photolization

Chien-Wen Jung, [I-Chao Shen](#), Sheng-Jie Luo, Bing-Yu Chen, and Wen-Huang Cheng
ACM SIGGRAPH ASIA Poster Program 2013

Texturing and Deforming Meshes with Casual Images

[I-Chao Shen](#), Yi-Hua Wang, Yu-Mei Chen, Bing-Yu Chen, and Wen-Huang Cheng
ACM SIGGRAPH ASIA Poster Program 2012

User-Assisted Disparity Maps

Hsin-Yi Chen, Yi-Shan Lin, [I-Chao Shen](#), Sheng-Jie Luo, Wen-Huang Cheng and Bing-Yu Chen
Pacific Graphics 2012 short paper

MusicSpace: You “Play” The Music

Chun-Yu Tsai, Hung-Jung Lin, Tzu-Hao Kuo, Kai-Yin Cheng, [I-Chao Shen](#) Bing-Yu Chen, and Rung-Huei Liang
ACM SIGGRAPH Poster Program 2010

Patent**Smoothing images using machine learning**

Nathan A Carr, Zhaowen Wang, Duygu Ceylan, [I-Chao Shen](#)
United States Patent, No. 9799102, issued October 24, 2017.

Grants

UTokyo x Google, AI for Science and Society, PI, Japan	2025 - 2026
NII Open Collaborative Research, PI, Japan [Link]	2025 - 2026
JSPS Kakenhi Grant-in-Aid for Young Scientists, PI, Japan [Link]	2023 - 2028
AIP Challenge Researcher, Japan Science and Technology Agency (JST), PI, Japan [Link]	2021 - 2022
JSPS Grant-in-Aid for Scientific Research for JPSP foreign fellow, Co-PI, Japan [Link]	2021 - 2023

Honors

IPPR Best Ph.D. dissertation award, Honorable mention	2021
JSPS Postdoctoral Fellowship for Foreign Researchers	2020 - 2022
MediaTek Fellowship	2017 - 2020

Invited Talks

Domain-specific Visuals in Generative Era: Font, Garment, and Layout, <i>Asiagraphics Web Seminar, Session 34.</i> [Link]	Oct. 2025
Tailored Computational Visual Content Creation, <i>ISID (International Symposium on Intelligence Design) 2024</i>	Mar. 2024
Tailored Computational Visual Content Creation, <i>BAI Research Seminar, Institute for AI and Beyond, The University of Tokyo</i>	Feb. 2024
Computer Graphics around you everyday and how to become a Computer Graphics researcher, <i>Chikushigaoka High School, Fukuoka, Japan</i>	July. 2022
Computer Graphics around you everyday and how to become a Computer Graphics researcher, <i>Tokyo Metropolitan Tama High School of Science and Technology, Tokyo, Japan</i> JSPS science dialogue program	July. 2022
Per Garment Capture and Synthesis for Real-time Virtual Try-on, <i>JST CREST 8th Research Area Meeting</i>	Sep. 2021
2D Visual Content Design Driven by Human-Guided Optimization, <i>The University of Tokyo, Tokyo, Japan</i>	Apr. 2021

Media

Per Garment Capture and Synthesis for Real-time Virtual Try-on	2021, 2022
- BS フジ - ガリレオ X 第 259 回「現実空間 × 仮想空間二つの世界を重ねる最新技術」(JP)	
- JST News	
- NIKKEI (JP)	
- ZAIKEI (JP)	
- TechCrunch Japan (JP)	
- Tii 技術情報 (JP)	
- Independent TV (UK)	

Professional Services

- **Technical Paper Committee and others:**
 - SIGGRAPH Technical Papers Committee (2026)
 - SIGGRAPH ASIA Technical Papers Committee (2025) [\[link\]](#)
 - Pacific Graphics Program Committee (2025) [\[link\]](#)
 - Eurographics Short Papers International Program Committee (IPC) (2025) [\[link\]](#)
 - SIGGRAPH Technical Papers COI Coordinator (2025) [\[link\]](#)
 - SIGGRAPH ASIA Technical Papers Committee (2024) [\[link\]](#)
 - AAAI (2023 [\[link\]](#), 2024 [\[link\]](#), 2025 [\[link\]](#))
- **Reviewer:**
 - SIGGRAPH, SIGGRAPH ASIA
 - NeurIPS, ICLR, ICML
 - Eurographics
 - CHI
 - Pacific Graphics
 - WACV
 - BMVC
 - Transaction on Multimedia (TMM)
 - Transaction on Visualization and Computer Graphics (TVCG)

References

Takeo Igarashi

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Ariel Shamir

Professor in Efi Arazi School of Computer Science , Reichman University

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